



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/696,350

10/29/2003

Chen-Hua Lin

251407-1050

6718

24504

7590

04/01/2005

THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP
100 GALLERIA PARKWAY, NW
STE 1750
ATLANTA, GA 30339-5948

EXAMINER

MRUK, GEOFFREY S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 04/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,350

Applicant(s)

LIN, CHEN-HUA

Examiner

Geoffrey Mruk

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 9-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-8, drawn to a pressure chamber apparatus, classified in class 347, subclass 68.
- II. Claims 9-16, drawn to a method of manufacturing a pressure chamber apparatus, classified in class 29, subclass 890.1.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product claimed could be made by a materially different process, such as ion milling the substrate to form the pressure chambers.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

During a telephone conversation with Daniel McClure on 22 March 2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-8. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

Claim 6 is objected to because of the following informalities:

With respect to claim 6, it is not clear what material is used for the vibrating plate. Examiner suggests "The pressure chamber as claimed in claim 1, wherein the vibrating plate is a silicon wafer, or a metal plate or a ceramic plate".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyata et al. (US 5,754,205).

With respect to claim 1, Miyata discloses a pressure chamber (Fig. 6, element 25) of a piezoelectric ink jet print head (Column 3, lines 18-30), comprising:

- a substrate (Fig. 6, elements 25a, 25b);
- a concave chamber (Fig. 6, elements 25, 52) formed on the substrate (Column 8, lines 50-59), having an opening of a relatively large sectional area (Fig. 6, element $\phi 2$) and a bottom of a relatively small sectional area (Fig. 6, element $\phi 1$);
- a vibrating plate (Elements 41 and 43 described in Column 5, lines 57-67; Column 6, lines 1-14) formed above the concave chamber; and
- a piezoelectric unit (Fig. 6, element 50) on the vibrating plate.

With respect to claim 2, Miyata discloses a substrate that is a silicon substrate (Column 5, lines 43-66).

With respect to claim 3, Miyata discloses the substrate is a silicon wafer with a crystal structure of [100] or [110] (Column 5, lines 43-66).

With respect to claim 4, Miyata discloses concave chamber that is formed by wet etching (Column 7, lines 24-42).

With respect to claim 5, Miyata discloses a cross-section of the concave chamber is rectangular (Fig. 4b(8), element 52).

With respect to claim 6, Miyata discloses a vibrating plate that is a silicon wafer, a metal plate or a ceramic plate (Column 5, lines 57-67; Column 6, lines 1-14).

With respect to claim 7, Miyata discloses a vibrating plate that is formed above the concave chamber by wafer-bonding (Column 5, lines 57-67; Column 6, lines 1-14).

With respect to claim 8, Miyata discloses the piezoelectric unit comprises lead zirconate titanate (PZT) (Column 6, lines 5-27).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dijkman et al. (US 6,079,820) discloses an inkjet print head where "The pressure chambers 13 preferably have an elongated shape with a length of e.g. 2 mm and a trapezoidal cross-section (top e.g. 300 μ m wide and bottom e.g. 150 μ m wide)" (Column 4, lines 2-6).

Kanaya et al. (US 6,217,158 B1) discloses an inkjet recording head where the pressure generating chamber includes concave geometry (Fig. 27, element 23).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is (571) 272-2810. The examiner can normally be reached on 7am - 330pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2853

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM
3/28/2005

GM


MANISH S. SHAH
PRIMARY EXAMINER
3/30/05